

Application No.: 10/659877

Case No.: 58079US004

Amendments to the Specification:

Please amend the specification as follows:

Please replace the paragraph beginning on page 4, line 5, beginning with "In a preferred embodiment" with the following amended paragraph:

In a preferred embodiment, the present invention is a quadpolymer generated from tetrafluoroethylene, vinylidene fluoride, a perfluorinated vinyl ether of the formula $\text{CF}_2=\text{CFOCF}_2\text{CF}_2\text{OCF}_3$, and a perfluoroalkyl vinyl ether of the formula $\text{CF}_2=\text{CFO}(\text{CF}_2)_m\text{CF}_3$ wherein: $m=0-4$, and preferably perfluoromethyl vinyl ether. This specific embodiment exhibits desirable solvent swell and glass transition temperatures that are very desirable for sealing applications. The quadpolymer composition is fully detailed in U.S. Patent Number 6,864,336 Application filed on September 2, 2003 (Attorney Docket No. 58041US004), herein incorporated by reference in its entirety.

Please replace the paragraph beginning at page 5, line 19, beginning with "A component" with the following amended paragraph:

A component of the amorphous copolymer may generally includes an effective amount of cure site moieties derived from one or more compounds of the formula: a) $\text{CX}_2=\text{CX}(\text{Z})$, wherein: (i) X is H or F; and (ii) Z is Br, I, Cl or $\text{R}_f\text{Z}-\text{U}-\text{R}_f\text{Z}$ wherein U=Br, I, Cl, or CN and R_fZ =a perfluorinated divalent linking group optionally containing O atoms; or (b) $\text{Y}(\text{CF}_2)_q\text{Y}$, wherein: (i) Y is Br or I or Cl and (ii) $q=1-6$. Preferably the cure site moieties are derived from one or more compounds selected from the group consisting of $\text{CF}_2=\text{CFBr}$, $\text{CF}_2=\text{CHBr}$, $\text{ICF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{I}$, CH_2I_2 , $\text{BrCF}_2\text{CF}_2\text{Br}$, $\text{CF}_2=\text{CFO}(\text{CF}_2)_3-\text{OCF}_2\text{CF}_2\text{Br}$, $\text{CF}_2=\text{CFOCF}_2\text{CF}_2\text{Br}$, $\text{CH}_2=\text{CHCF}_2\text{CF}_2\text{Br}$, $\text{CH}_2=\text{CHCF}_2\text{CF}_2\text{I}$, $\text{CF}_2=\text{CFCl}$ or mixtures thereof. In a most preferred embodiment, the iodine, bromine, or chlorine are chemically bound to chain ends of the first component of the compound. Optionally, nitrile cure site moieties may also be utilized. The crosslinkable composition can further include one or more substances known to promote the formation of triazine rings by trimerization of nitriles under the influence of heat.

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These include organometallic compounds of arsenic, antimony, and tin described in U.S. Pat. Nos. 3,470,176, 3,546,186, and the metal oxides described in U.S. Pat. No. 3,523,118, all herein incorporated by reference in their entirety.

Please replace the paragraph beginning at page 6, line 1, beginning with "The compound also" with the following amended paragraph:

The compound also includes a curable component that enables vulcanization of the fluoropolymer. The curable component may include curable materials, such as, for example, peroxide or one or more co-agents. Peroxide curatives include organic or inorganic peroxides. Organic peroxides are preferred, particularly those that do not decompose during dynamic mixing temperatures. Examples of non-limiting peroxides include dicumyl peroxide, 2,5-dimethyl-2,5-di(~~t-butylperoxy~~)hexane di(t-butylperoxy)hexane, di-t-butyl peroxide, t-butylperoxy benzoate, 2,5-dimethyl-2,5-di(t-butylperoxy)hexane-3 and laurel peroxide. Other suitable peroxide curatives are listed in U.S. Pat. No. 5,225,504 (Tatsu et al.). The amount of peroxide curing agent used generally will be 0.1 to 5, preferably 1 to 3 parts per 100 parts of fluoropolymer. Other conventional radical initiator are suitable for use with the present invention.

Please replace the paragraph beginning at page 7, line 21, beginning with "Chain transfer agents" with the following amended paragraph:

Chain transfer agents may be used in the polymerization in order to control the molecular weight distribution of the resulting polymers. Examples of chain transfer agents include isopropanol; methyl ethyl ketone; ethyl acetate; diethyl malonate; isopentane; 1,3-diiodoperfluoropropane; 1,4-diiodoperfluorobutane; 1,6-diiodoperfluorohexane; 1,8-diiodoperfluorooctane; methylene iodide; trifluoromethyl iodide; perfluoro(isopropyl) iodide; and ~~perfluoro(n-heptyl)~~ perfluoro(n-heptyl) iodide. Polymerization in the presence of iodine-containing chain transfer agents may result in a polymer with one or two iodine atoms per fluoroelastomer polymer chain, bound at the chain ends (see for example U. S. Pat. No. 4,243,770 and U.S. Pat. No. 4,361,678, herein incorporated by reference in their entirety). Such polymers may have improved flow and processability compared to polymers made in the absence

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of a chain transfer agent. Generally, up to about 1 weight percent iodine chemically bound to fluoroelastomer chain ends will be incorporated into the polymer, preferably from 0.1-0.3 wt. %.

Please replace the paragraph beginning at page 8, line 21, beginning with "Chain transfer agents" with the following amended paragraph:

The cured compound of the present invention exhibits a combination of beneficial physical characteristics relating to durometer, retraction at lower temperature (TR-10 and permeation rate when compared to conventional compounds. The compound exhibits a low durometer value, as indicated by the Shore A hardness test (ASTM D2240-02) of about 60 ~~or~~ or greater, and preferably 65-85. The durometer value is an indication of the elasticity and viscoelastic behavior of the material. The compound also has a TR-10 of about -25°C or less, and preferably -30°C or less. The CE10 fuel permeation rate of the compound at 40°C, as measured using a modified version of the procedure described in ASTM D 814-95 (Reapproved 2000), as set forth in the Examples section below, is 65 (g-mm/m²-day) or less, preferably 60 (g-mm/m²-day) or less, most preferably about 55 (g-mm/m²-day) or less. The resulting compound exhibits a solvent volume swell in Fuel K (CM85) for 70 hours at 40°C of about 60% or less, according to ASTM D471-98. The combination of the noted physical characteristics make the curable compound well suited for sealing applications that require low temperature performance with excellent permeation resistance.

Please replace the paragraph beginning at page 11, line 1, beginning with "Glass transition temperature" with the following amended paragraph:

Glass transition temperature (T_g) and detection of melting peak or point (T_m , an endothermic process) was determined in accordance with ASTM D 793-01 and ASTM E 1356-98 by a Perkin-Elmer differential scanning calorimetry DSC 7.0 ~~at~~ under a nitrogen flow and a heating rate of 20°C/min. DSC scan was obtained from -40°C to 200°C at 20°C/min. scan rate.